The management of the European coast: West and East
La gestion du littoral européen: Ouest et Est

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Abstract: The development of the European coast is considered in terms of classification of uses, with each major use group considered, pointing out contrasts between western and eastern core regions. Information management is discussed in terms of surveys, environmental databases and setting of standards, followed by a review of information assessment and professional practice. Finally, organisations and integrated management developments are evaluated at national, international and supra-national (European Union-EU) levels. Integrated management initiatives are identified.

Keywords: Development - Information - Assessment - Integrated coastal management

Résumé: L'évolution du littoral européen est envisagée sous l'angle d'une classification des usages en soulignant, pour chacun des principaux types d'usages, les différences existant entre l'Ouest et l'Est. La gestion de l'information est discutée dans les domaines des analyses, des bases de données sur l'environnement et de l'évaluation des normes; suit une présentation critique de l'information et des pratiques professionnelles. Enfin, les organismes et les politiques de gestion intégrée sont évalués aux niveaux national, international et supra-national (Union Européenne). Des initiatives de gestion intégrées sont présentées.

Mots-clés: Évolution - Information - Évaluation - Gestion intégrée des zones côtières

The in-depth consideration of the nature, uses and management of the European coastal lands and seas provided by the Littoral 95 Conference affords a well-timed opportunity for a number of reasons. First, the European economy is undergoing a profound structural transition similar in scale to that of the 1930s and 1940s, and previous similar changes at approximately 50-60 year intervals extending back probably to the beginning of European modern history at the end of the fifteenth century. Currently, attention naturally tends to focus on Eastern Europe, where the changes brought about by the end of the state central planning system are obvious; however, in many respects this is just a matter of degree. In Western Europe also profound changes are occurring, and the role of the state in particular at supra-national (European Union), national, and local scales is undergoing a fundamental re-evaluation.

It is against this background that the environment industry focusing upon a rapid growth of environmental management measures has come into being since the early 1970s, in parallel with the growth of the much broader environmental movement involving voluntary organisations and the general public. In this context coastal management has evolved as a relatively new concept—at least in its integrated aspects—although substantial coastal management measures have a long history, particularly in the field of coast protection, which has been the subject of intensive measures in certain low-lying areas throughout modern European history, notably on the low-lying coasts of the southern North Sea in the Netherlands. In its modern guise coastal management not only links land and marine systems of management, but also provides a strong focus of innovative ideas and measures in environmental management as a whole.

This paper accordingly begins with a discussion of the present development scenario in both western and eastern parts of Europe before going on to consider in turn the major elements which make up the developing coastal management system. The discussion of coastal management continues with an evaluation of information management and assessment aspects, followed by consideration of professional practice and the related organisational dimensions of European coastal management. Finally there is an assessment of the degree of integration involved in the emerging European coastal management regime.

I - DEVELOPMENT

The pattern of uses in the coastal zone is traditionally viewed as pertaining either to land or sea, though it is generally recognised that intensity of uses of both land and sea in the vicinity of the

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shoreline is often greater than elsewhere, on land and sea respectively. Conceptually, in the present context, it is often more useful to consider combinations of urban, rural and, occasionally, wilderness intensities of use covering both land and sea (Smith, 1991). Within this pattern, eight fundamental groups of uses can be readily defined which cover both land and sea including transport, strategic uses, biological resources, mineral and energy resources, waste disposal, leisure and recreation, education and research, and conservation. In addition is coastal engineering on the shore-line itself; while on land only is settlement and other secondary, tertiary and quaternary economic sector industries.

This basic approach to classification of uses, which derives from fundamental human purposes in the use of the environment, can provide a broad, long-term view of trends in use, which is an essential starting point for coastal management issues, including in particular an appreciation of the nature of the management systems involved in coastal management discussed in the final section of this paper. Meanwhile a useful starting point is to consider in turn salient features of each of the major use sectors. In this it is useful to highlight at the outset the continuing urbanisation of both Western and Eastern Europe, and therefore expansion of urban settlement and the land-based industrial sectors already noted. This urbanisation is the driving force of all the use groups, and continues to put increasing pressure on the environment as a whole. There remains, however, a sharp contrast overall between west and east in industrial structure, with the west having a more complex structure overall, while the east still has a relatively more important heavy manufacturing sector, undoubtedly closely related to the environmental problems which have been widely discussed in the early 1990s.

In transport, the dominant current theme is integration in the western core, represented by the building of high speed rail links (including the Channel Tunnel), the burgeoning of short haul air links, and the continued development of a relatively small number of very large container ports and bulk handling terminals. These trends can be expected to develop to a lesser extent in the east, where access to the sea is a major issue receiving renewed attention (Shlikhter, 1994). The real revolution in contemporary Europe has of course taken place in the strategic or military sector, where the geographical focus of the Cold War was of course between the western and eastern core regions of Europe. The most immediate consequence for coastal regions in both cases has been a marked run-down in naval activity, including closure of naval bases. In the east, there also appears to have been large scale dumping of nuclear waste in the Barents Sea (Mac Kenzie, 1993).

As regards mineral and energy resources, interest focuses principally in both West and East on offshore hydrocarbons. The North Sea is now a mature province with extensive associated coastal developments, and still at the global leading edge of technology, as current interest focuses on deep water exploration west of Shetland. In the East, the main interest is in the potential of the Barents Sea shelf, which has still to be fully explored, although during the Cold War era it gave impetus for the settlement of a maritime boundary between the Soviet Union and Norway (Churchill et al., 1992).

In fisheries, as with oil and gas, the main developments in both west and east are in the north. Whereas the West has long enjoyed a major fishing industry based on the adjacent continental shelves, the East has relied upon a global distant water fishing effort, now in sharp decline. In all areas, practically all the major commercial stocks are under severe pressure of overfishing, which has not been ameliorated in the western case by the Common Fisheries Policy of the European Union (Holden, 1994) operated in conjunction with Norway's fisheries policy in the northern part of the western core fishing grounds. On the coast generally, therefore, distant water fishing ports have greatly declined, or even disappeared, while the future of many small fishing communities remains in doubt. Because of the high population and high degree of urban industrial development, waste disposal and associated pollution are major issues in both West and East. Fear of pollution risks spawned the North Sea Ministerial Conferences in the early 1980s, but prior to that the western -and part of the eastern core regions- had the comprehensive regional approach to marine pollution control enshrined in the Oslo, Paris, Helsinki and Barcelona Conventions of the 1970s, which have been upgraded in the early 1990s. The most serious pollution problems appear to exist in the east, as already noted, focusing in the first instance on the rivers, and the inland seas, as much of the eastern core region lies far from the coast, especially in the north and west.

In consideration of the leisure and recreation industries, the coasts everywhere have always been a primary focus. The initial focus of development, particularly in Northern Europe, was the development of coastal resorts relatively close to major urban centres, both on the coast and inland, linked by railways. As access to the coast has improved, by road and air particularly, it is Southern Europe -both west and east- which has become the primary focus of the main urban holiday expansion. Paralleling this has been the growth of activity holidays and leisure, both close
to and far away from the homes of the participants. Thus tourism, leisure and recreation have become the greatest single challenge to coastal management on most parts of the coast throughout Europe.

It is the growth of leisure and recreation which in turn focuses attention on research and conservation. Much of the basic research activity in the coastal zone, both offshore and onshore, has been devoted to land and hydrographic surveying, and environmental sciences for mapping and scientific purposes respectively. Large data bases of environmental information are in existence in many countries. A first call on this information is for conservation, the importance of which has grown in parallel with tourism and recreation industries. National approaches in Europe are very variable, and reliant upon the state town and country planning systems. A notable example is the UK, where conservation has also been pursued by a wide range of voluntary organisations, led by the National Trusts (of England and Wales, and Scotland respectively), where management is based on ownership, with conservation of both the natural and built environments a priority.

II - INFORMATION MANAGEMENT

Much of the emerging demand for information management derives from conservation activities and research in the widest sense. The coastal zone by definition involves sources of information pertaining both to the land and to the sea, in the possession of a wide range of local and national organisations in the case of the former; and national and international organisations in the case of the latter. Of particular interest in a coastal management context is a wide range of spatially referenced field survey data, organised in a variety of ways ranging from conventional paper records to electronic data bases. Data exists in a variety of formats, covering many time scales. The development of modern electronic communications, particularly the Internet, is beginning to make possible much more effective communication and co-ordination of these data. In many ways the main challenge for coastal management is co-ordination, although there are special coastal data bases such as CORINE in existence, and preliminary work has been carried out in the coastal management dimensions likely to arise in the context of the new European Centre for Earth Observation. Additional examples include the LOICZ, ELOISE and UK LOIS projects.

On the marine side the principal data bases are national, namely, hydrographic surveying for the purposes of navigational charting; marine geological surveying, both compiled by national geological surveys and supplemented by private sector mineral surveys principally for hydrocarbons and aggregates, marine science data bases which are mainly oceanographic and meteorological, and produced by national oceanographic laboratories and meteorological offices, and fisheries data bases produced mainly by national fisheries laboratories. The topographic and geological data bases are large and already published in map or chart form for the most part. Certain of the data bases have strong international networking arrangements, especially relating to the atmosphere and water column, and to fisheries and pollution. Of particular note are the networks provided through the International Council for the Exploration of the Sea (ICES) and the Mediterranean Action Programme (MAP).

On land, the most important data bases are the national topographic surveys, which also act as the basis for urban and rural planning and related economic and social data, national geological surveys, and meteorological data. Again, the first two of these exist to a large extent in published formats.

Information management in the first instance is aimed at a wide range of assessment purposes discussed further below. In most cases this work remains local and national, rather than European. The main European demands relate to marine and atmospheric data rather than land data, particularly in areas such as fisheries management and pollution control. There is also a strong European interest in standardisation of data base management systems themselves; and co-ordination of various kinds in areas as diverse as fisheries management, port and shipping management and land use planning. In certain cases, such as the Netherlands, an advanced degree of co-ordination for management purposes has been achieved relating to both on land at sea. In terms of advances in information technology, particular interest attaches to the development of standards, for example, in electronic charting; to the continued replacement of paper by electronic technology, both in the production of maps and charts, and other types of data; to the future possibilities of communication which will be provided as the Internet continues to develop; and to the use of geographic information systems, especially in the integration of physical and human data for resource and environmental management purposes. To gain any degree of integration of data and its uses at European level depends crucially upon continued advance on all
these fronts, which is a long-term development, extending over perhaps 10 to 20 years into the future.

In the present context, especial interest attaches to the creation of specific coastal management data base management systems. These are already in existence. Examples may be categorised as either coastal or offshore. Coastal examples include those designed for coast protection and flood defence, for example in East Anglia and the Netherlands; coastal conservation, as in the UK. Offshore examples include the use of GIS for management of aggregate dredging; and the use of electronic charts for fisheries obstructions. Taken together, these various examples provide a starting point for the production of a European standard sea use mapping system.

III - INFORMATION ASSESSMENT AND PROFESSIONAL PRACTICE

The current rapid development of information management is a necessary prerequisite for a more unified view of the use made of information for coastal management. There are two particular aspects of this use which must be considered in the present context, namely, the ways in which information is assessed, and the professions involved in that assessment.

**Information assessment** is of course governed by the objectives inherent in coastal management. The first area of interest is *environmental impact assessment*. Although the terms tends to mean different things in different contexts, it is basically concerned with direct relationships between the coastal environment on the one hand, and the human activities going on in that environment on the other. The concept and practice of EIA has become firmly established in Western Europe with the adoption of the EC Directive of 1988. In practice it was widely applied much earlier in the 1970s in conjunction with the coastal development associated with the North Sea oil industry, generally without specific national legislative measures.

The second field is *technology assessment*. This is an area formally recognised in the United States, but not clearly defined in Europe, either nationally or at European level. It is basically concerned with design and implementation of technology, in the broadest sense, and is crucially important in areas such as coast protection, harbour works, waste disposal and fish farming.

Third is *economic assessment*, including land and natural resources valuation, the economics of industries and activities carried on both at the coast and offshore, and the economics of the government role in regulating these activities, including public service functions such as land use planning. Particular interest attaches to the geographical relationships between private and public sectors, including the possibility of development of a private market in the seabed “submerged lands” and marine resources, especially with regard to the urban sea areas and offshore fisheries. Also important is the increasing economic attractiveness of locating all kinds of businesses in the coastal zone. The situation in most instances regarding regulation is complex, with considerable uncertainty surrounding possible extension of planning powers from the land into the marine environment per se.

Fourth is *social impact assessment*, associated with regional development implications of coastal activities, including employment, per capita income, population levels and movement, and industrial structure. These are major regional policy considerations, although commonly land-oriented. At the coast, the advent of the North Sea oil industry was associated with a considerable amount of this kind of work in the 1970s. It remains potentially very important for major industrial developments such as ports, power stations, refineries and chemical plants; and for the maintenance of the fisheries which throughout Europe are concentrated in rural areas.

Finally is *risk assessment*, dealing especially with changes over time in the four fields mentioned so far, and related to specific activity sectors. The most important sectors involved in practice include ports and shipping, energy generation, heavy manufacturing, coast protection and flooding, and pollution.

**The main professions involved in information assessment** have a long history of involvement extending back a century or more in some cases. These include in particular surveying, science, engineering, planning and law, although their detailed organisation and manifestation varies widely throughout Europe in relation to the assessment categories outlined above. The scope and terminology of fields of professional practice vary from country to country throughout Europe. NP although the science and engineering base in both West and East is good, the application of information assessment in environmental management generally and coastal management in particular is better developed in the West than in the East, and there is a considerable and growing
export of expertise from West to East. In addition, the development of information assessment is continuing in a complicated and piecemeal way. Terminology is not uniform, and there is a considerable way to go. In many ways the first level of integration which has to be achieved is the employment of the full range of assessment techniques, at least for every major coastal development project. As already noted, the precise nature of the professional input will vary from place to place, although ultimately all the major professional fields noted above are required.

IV - ORGANISATIONS AND INTEGRATED MANAGEMENT DEVELOPMENTS

The cornerstone of coastal management organisation in Europe is at national government level, although most of it is not labelled coastal management per se, but exists rather at the intersection of national land and sea management systems respectively (Ballinger et al., 1994). It is also becoming just a little simplistic to regard it only as a governmental activity. Local and national voluntary bodies are increasingly involved, notably in the conservation field. Further, private sector firms, for example in the oil industry, and ports and shipping sector are playing an increasing role in the course of their operations.

The national framework applies particularly to the regulation of specific coastal industries and activities, including ports, hydrocarbons, aggregate extraction, energy generation, fisheries, fish farming, waste disposal land pollution, leisure and recreation, and conservation; and to the national planning systems. However, much of the real decision-making is at local rather than national level, dealing with specific developments such as harbours, major industrial installations, and conservation zones. In this the politics of specific urban and rural communities play an important role, as was frequently demonstrated during the build up of the North Sea oil industry, especially in Scotland. In this again, voluntary and private sector organisations have an increasing input.

Whereas local and national organisations dominate the land side of coastal management, international organisations and the European Union have a relatively greater role on the sea side. The principal international organisations involved are those based on regional formal treaties and other types of agreement. Of particular note are the regional pollution conventions for the North East Atlantic, Baltic and Mediterranean which of all been updated in the early 1990s, replacing a relatively narrow environmental protection approach with a broader environmental management paradigm, the Port State Memorandum for control of sub-standard shipping in western European ports, ICES which has functioned since 1902 as an intergovernmental organisation co-ordinating fisheries and related marine environmental research, and the North Sea Ministerial Conference series commenced in 1984 initially to co-ordinate matters relating to prevention of pollution, but in fact initiating a comprehensive scientific programme (see e.g. the successive North Sea Quality Status Reports published by the North Sea Task Force), and with an ever-widening remit for discussion.

The European Union is also pursuing an ever-widening remit in marine affairs. By far the most important initiative is the increasingly beleaguered Common Fisheries Policy which involves major centralisation of power in fisheries management decision-making away from national governments to Brussels. Of potentially greater significance in the present context are a series of Directives which, though not always specifically aimed at the coastal zone, in practice have a strong focus there. These have related in particular to bathing water quality, urban wastewater, birds, environmental impact assessment, and special areas of conservation and habitats.

The development of integration in coastal management arising from the activities and interests of the wide range of organisations involved arguably exists in two dimensions. The first of these is focused upon organisational responsibilities and functions, whether legally defined or not. These integrated approaches vary in significance, both in degree of integration and geographically. The most important ones relate to land use, ports, river catchments, shorelines, inlets and other types of semi-enclosed coastal waters such as the wadden seas. The first two of these are development led and based, and are primarily based on national legislation in the form of planning acts and harbour acts, which are then managed by local government and port authorities respectively. In the first case allocation of land is a primary aim; in the second safety and environmental impact in port operations are a major concern. In contrast to the first two, catchments, shorelines and semi-enclosed waters measures tend to exist as non-statutory management plans based on environmentally define areas and aimed primarily at environmental management aspects such as impact and risk, which are the responsibilities of specific managing agencies. In England and Wales, for example, the Environment Agency (formerly the National Rivers Authority and Her Majesty’s Inspectorate of Pollution) are responsible for catchment management plans; consortia
of local authorities under the Ministry of Agriculture, Fisheries and Food are responsible for environmentally defined shoreline management plans; and estuary management plans are led mainly by English Nature, the national statutory conservation agency. Supplementing these are a considerable range of local and regional fora, which are composed of a wide range of public, private and voluntary interests, as well as (for England only) a national Coastal Forum run by the Department of the Environment.

Substantial degrees of initial integration exist in these management measures, if management is defined in technical and general categories as outlined in the previous section of this paper, although obviously priorities vary according to the type of management, the organisation, and temporally. The second dimension of integration concerns the inter-relationships among the types of management as defined principally by organisational responsibility; and the related ways in which individual -particularly technical functions such as information management- are coordinated across the full range of management measures. It is here that the great challenge of integration lies. Most developed in this respect are the legislative measures such as land use planning; and the national and international measures governing port management and fisheries. The task of integration is at a much earlier stage where natural resources such and the natural environment itself are concerned.

Conclusion

The development patterns present on European coasts focus on the two major core regions of West and East respectively, which possess very different economic and political frameworks. The respective regions are also characterised by very different coastal management situations, with western Europe in general possessing a much more advanced system of management, partly because of the contrasting environmental conditions between west and east, and partly because of the different priorities accorded to environmental management issues generally in the two regions.

The most fruitful starting point for establishing common approaches which more or less allow for a wide degree of freedom in the diversity of management cultures involved is in the field of information management, which in turn can provide a base for sound information assessment and professional practice. The recently announced EU demonstration project in coastal management (CEC, 1995), together with the Estuarial project will no doubt assist in this regard.

The development of integration is dependent upon the combined evolution of organisational practice against this diverse cultural background, and involves both internal and external co-ordination. Two groups of management systems are evolving. The first is development-based and focused on land use planning and ports management, and is arguably the group in which land and sea management systems are most fully integrated, especially relating to ports and shipping, fisheries, mineral and energy extraction, waste disposal and conservation. The second is environment-based and includes the specific shoreline, catchment, inlet and semi-enclosed waters management arrangements.

References


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